# HSI2021 - Call For Submission
## International Conference on Human-Systems Integration

## From the Chair

INCOSE International Conference on Human Systems Integration, HSI2021, will be held in San Diego, California, USA on November 17-18, 2021. Save the date! HSI emerges from the combination of human-centered design (HCD) and systems engineering (SE) as a highly participative and incremental process. In 2020, INCOSE and IEA (International Ergonomics Association) signed a Memorandum of Understanding that fosters this combination. We are proud to co-chair this conference.

HSI requires creativity (thought as synthesis and integration) as well as experience awareness and validation (thought as experimental tests, operations quality analysis, discovery of emergent properties, standards, and so on).

Modeling and simulation capabilities tremendously improve possibilities of taking into account human factors during the early stages of engineering design and throughout the entire life cycle of systems. Operational personnel can be involved in virtual operations tests using human-in-the-loop simulations to determine appropriate requirements for effective design and development.

HSI2021 will take place in San Diego, California, a beautiful proactive place, where engineering education, innovation and tourism are main assets. In this setting, the conference intends to inspire and engage researchers, innovators and practitioners in productive discussions of how technologies, organizations, jobs and responsibilities of operations actors, engineering designers, certifiers, trainers, maintainers and many other technology stakeholders can be reshaped to meet near and long-term goals of safe, efficient and comfortable operations.

HSI2021 will continue the discussions started during HSI2019 in Biarritz, France, and collaborative work done during the last year in INCOSE HSI Working Group. Successful HSI workshops have been held in 2020 despite COVID pandemic. We invite papers on visionary and transformational ideas and "out-of–the-box" thinking that can move industrial operations in new directions. The question "Digital People?" will be the primary focus of HSI2021. We are moving into a deeper digital society where people should keep control and management of affairs in the most tangible way. Therefore, we encourage the dialogue between industrial sectors that includes aeronautics, space, medicine, automotive, oil and gas, defense as well as other fields involved in Industry 4.0 and more generally systems that are more digital.

HSI2021 will bring together manufacturers, operators, government, research centers and academia to focus on improving industrial teams of teams. The current economic environment puts additional pressure on all of us to make industrial operations more efficient and affordable. We invite you to submit innovative methods, techniques, tools and technology that can lead the way. This includes laboratory research and field investigations, industrial developments and perspectives. While the primary focus is on HSI, we will consider papers on a wide range of topics including design, evaluation, certification and rule-making, training, maintenance, in-service experience and incident/ accident investigation.

HSI2021 is organized in cooperation with IEA, ACM and Air & Space Academy.

**General Chair of INCOSE HSI2021, Guy André Boy**
**General Co-Chair representing IEA, Michelle Robertson**

## Deadlines

**12 April 2021 :** Full research papers
**12 April 2021 :** Industry papers, Early stage research papers
**12 April 2021 :** Panels, Posters, Demos, Workshops
**17 May 2021 :** Paperless Contributions
**31 May 2021 :** Acceptance notification
**5 July 2021 :** Camera-ready
**17-19 November 2021 :** HSI2021 in San Diego, CA

# Digital People?

## General Co-Chairs

**Chair: Guy A. Boy**, CentraleSupélec & ESTIA, France, Chair of INCOSE HSI WG
**Co-Chair**: Michelle Robertson, Office Ergonomics Research Committee, IEA, USA

## Technical Co-Chairs

### Papers Co-Chairs
**Grace Kennedy**, University of Wollongong, Australia
**Michael Boardman**, Ministry of Defence, U.K.

### Industry papers Co-Chairs
**Alexander Rudolph**, EUMETSAT, Germany
**Jean-Jacques Speyer**, University of Brussels, Belgium

### Workshops Co-Chairs
**Holly Handley**, Old Dominion University, USA for IEEE
**Ami Harel**, e2eS, Israel

### Panels Co-Chairs
**So Young Kim**, JPL-Caltech, USA
**Avigdor Zonnenshain**, Technion, Israel

### Demonstrations Co-Chairs
**Stélian Camara Dit Pinto**, ESTIA, France
**Gopal Jani**, KineticX Tech Solutions, India

### Early Stage Research papers Co-Chairs
**Pernilla Ulfvengren**, KTH, Sweden
**Dimitri Masson**, ESTIA, France

### Posters Co-Chairs
**Wei Tan**, Civil Aviation Univ. of China, China
**Peter Moertl**, Virtual Vehicle Research Center, Austria

### ACM-SIGCHI Liaison
**Philippe Palanque**, University of Toulouse, France

## Program Committee

**Jutta Abulawi**, Hamburg University of Applied Siences, Germany
**David Atkinson**, Continental, USA
**Jawahar Bhalla**, SESA, Australia
**Michael Boardman**, MOD, UK
**Jean-François Boujut**, Grenoble Tech, France
**Sebastien Boulnois**, RoundFeather, USA
**Pascale Carayon**, Uni. Wisconsin-Madison, USA
**Divya Chandra**, USDOT Volpe Center, USA
**Michael Conroy**, University of Central Florida, USA
**Nancy Cooke**, Arizona State University, USA
**Nadine Couture**, ESTIA, France
**Françoise Darses**, IRBA, France
**Bernardo A. Delicado**, INCOSE, Spain
**Philippe Doyon-Poulin**, Ecole Poly. Montréal, Canada
**Markus Durstewitz**, Airbus, Germany
**Mahmoud Efatmaneshnik**, Uni. South Australia, Australia
**Mica Endsley**, SA Technologies, USA
**Didier Fass**, Lorraine University, France
**Marc Garbey**, Houston Methodist Hospital, USA
**Jose Orlando Gomes**, Federal University of Rio de Janeiro, Brazil
**Gudela Grote**, ETH, Switzerland
**Holly Handley**, IEEE, Old Dominion Uni., USA
**John Hansman**, MIT, USA
**Ami Harel**, e2eS, Israel
**Avi Harel**, ErgoLight, Israel
**Andreas Makoto Hein**, IRT SystemX, France
**Ella-Mae Hubbard**, Loughborough University, UK
**Gopal Jani**, KineticX Tech Solutions, India
**Marija Jankovic**, CentraleSupélec, France
**Grace Kennedy**, University of Wollongong, Australia
**Ratan Khatwa**, Honeywell, USA
**So Young Kim**, JPL-Caltech, USA

**Parimal Kopardekar**, NASA, USA
**Bernd Korn**, DLR, Germany
**Jérémy Legardeur**, ESTIA
**Wen Chin Li**, Cranfield University, UK
**Andreas Lüdtke**, OFFIS, Germany
**Azad M. Madni**, University of Southern California, USA
**Harald Molina-Tillmann**, ITV System Design, Germany
**Dimitri Masson**, ESTIA, France
**Peter Moertl**, Karl-Franzens-Uni., Graz, Austria
**Kathleen Mosier**, University of San Francisco, USA
**Cynthia Null**, NASA Ames, USA
**Philippe Palanque**, University of Toulouse, France
**Avi Parush**, Technion, Israel
**Jean Pinet**, Air & Space Academy, France
**Susan Plano-Faber**, Plano-Faber Services LLC
**Edwige Quillerou-Grivot**, INRS, France
**Florence Reuzeau**, Airbus, France
**Michelle Robertson**, Office Ergonomics Research Committee, USA
**Alexander Rudolph**, Continental, Germany
**Dirk Schaefer**, EUROCONTROL, France
**Axel Schulte**, Bundeswehr Uni., Germany
**Jean-Jacques Speyer**, Univ. Bruxelles, Belgium
**Sun Ruishan**, Civil Aviation Univ. of China, China
**Larry Shattuck**, Naval Postgraduate School, USA
**Murray Sinclair**, Loughborough University, UK
**David Michael Sirkin**, Stanford University, USA
**Wei Tan**, Civil Aviation Univ. of China, China
**Riccardo Tartaglia**, Italian Network for Safety in Health Care, Italy
**Pernilla Ulfvengren**, KTH, Sweden
**Rob Vingerhoeds**, ISAE-SUPAERO, France
**Andrew Wright**, Segula Technologies Australia
**Bernard Yannou**, CentraleSupélec, France
**Avigdor Zonnenshain**, Technion, Israel

# Digital People?

## Themes

### HSI principles, methods and tools
- Tools & methods for HSI
- Ethnographic studies, Human error, Fatigue
- Situation awareness, decision-making
- Performance, workload & competence
- Crisis & unexpected events management
- Training issues, personnel selection
- HSI metrics for certification
- Role of HSI in accident investigations
- Experience feedback & reporting systems
- Emerging operational issues in complex systems
- Concepts of operations, scenario-based design
- Mock-ups, part-task and full-task simulators
- Human Centered Design & Integration
- Human Factors Engineering
- Creativity, design thinking and design theories
- Transdisciplinary research and practice in HSI
- Human & organizational resilience
- Digital human modelling
- Design for usability, UX
- Neuroscience contributions

### Organizational and societal issues and solutions
- Teams of teams & Systems of Systems
- Next generation OPS/technical documentation
- Automation across systems
- Supervision, mediation, cooperation, competition
- Multi-agent systems
- Tangible interactive systems
- Change mgt, lean mgt
- Organization design and mgt
- Maintenance resource management/CRM
- Human-centered MBSE & Model-based HSI
- Socio-technical systems
- Modeling & Simulation
- Human-in-the-loop simulation
- Digital enterprise
- Environment & Sustainability

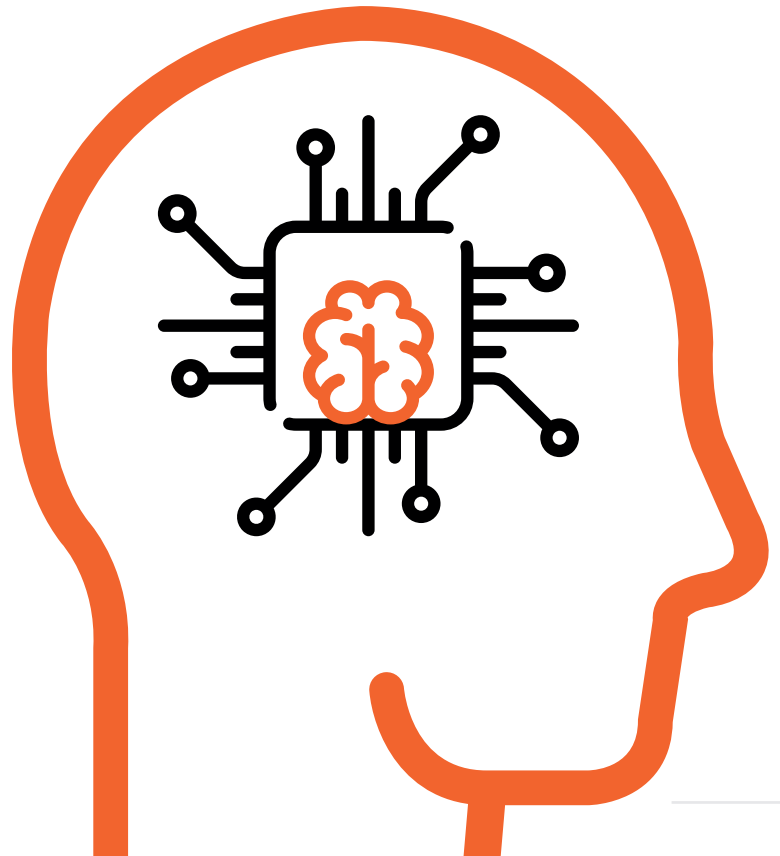### Humans, autonomy and complexity
- Automation vs. autonomy
- Cyber physical & human systems
- Training for autonomy
- Adaptive system design
- Complexity analysis and property emergence
- Autonomous systems maturity & reliability
- Flexibility in design and operations
- Human-Robot Interaction
- Task analysis and Activity analysis
- Information visualization, immersive environments
- Design for flexibility
- Survivability
- Habitability

### HSI, safety and infrastructures
- Agents-infrastructure integration
- Safety management systems (SMS)
- Influence of national and organizational cultures
- Integration and global coordination
- Risk taking and management
- Trust & Collaboration
- Occupational health & safety
- Responding to infrastructure collapse
- Integrated Logistics Support
- Workforce planning
- HSI planning
- Biology-inspired functions & infrastructures
- Hybrid humans-robots organizations

### Legal and Regulatory
- Standards and specific regulations
- Regulatory compliance
- Criminalization of accidents. Legal issues
- Regulating autonomous vehicles
- HSI means of compliance
- HSI evaluations for design and certification
- Responsibility & Accountability
- Quality and continuous improvement
- Sustainability and system design

# Digital People?

# Track Categories

### Research Track
**Deadline: April 12, 2021**
*(up to 8 pages including diagrams and references)*

Research Papers present significant contributions to research, development and practice in the field of human-systems integration. Submissions should present new approaches to HSI, emphasizing the interest and originality of the approach and provide complete and substantial support for its results and conclusions. Only unpublished papers will be accepted.

### Industry Track
**Deadline: April 12, 2021**
*(From 4 to 6 pages including diagrams)*

We solicit papers with practical implications or tied to actual implementation in industry and the operational world. These papers will be presented either in special sessions or combined with related research papers. This track is dedicated to practitioners to share the recent evolution of industrial innovations.

### Early Stage Research Track
**Deadline: April 12, 2021**
*(Up to 4 pages including diagrams and references)*

Early stage research has not yet been completed, or may be in the phase of developing research questions and approach, results, or practical work. This track encourages the active participation of emerging researchers and professionals to support their work and to involve them in the HSI community.
This track also welcomes submissions from students involved in graduate work not yet sufficiently completed for papers in the regular research track. These papers will be presented in a special session allocat ing more time to discussion and feedback.
Early stage researchers may be assisted by an experienced mentor in their area of research. All submissions should include a brief description of the researcher's experience.

### Panels, Workshops, Posters Demos
**Deadline: April 12, 2021**
*(Up to 2 pages including diagrams and references)*

Panels must explore a range of perspectives as well as controversial and burning issues. Panelists should include different backgrounds, i.e., practitioner/researcher, cultural backgrounds, and disciplines. Workshops are discussion forums of work in progress, which are managed by a chair and a committee, and focused on a specific theme. All accepted workshops are held on a half-day or full-day period.
Posters present research in progress or recently developed industrial devices and innovative methods. Demos must show ground-breaking innovative products and prototypes.

### Paperless Track
**Deadline: May 17, 2021**
*(An Abstract — up to one page)*

We solicit paperless contributions with burning work in progress implications. These paperless contributions will be presented either in special sessions or combined with related research papers. This track is dedicated to last minute contributions that are very important to share.

## Submissions

Submissions must be written in English and present unpublished work. They will be peer-reviewed by at least 3 reviewers. Acceptance will be based primarily on originality and high-quality contributions. They should have a cover page including title, author's names, postal and electronic addresses, keywords and abstract, and be sent in PDF format. For information on presentation format consult HSI2021 website. All accepted submissions will be presented at HSI 2021 and appear in the Conference Proceedings. Selected full papers will be accessible to INCOSE members and in-cooperation associations (to be announced later).

**Please contact incose@kmdevents.net for more information.**

**www.incose.org/hsi2021**